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PORTLAND SERVICE CENTER
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Portland, Oregon 97208

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TECHNICAL NOTES

MODIFICATION AND DUAL ATTACHMENT OF THE HANSEN BROWSE SEEDER UNITS

Donald R. Cain, Ely DO

Under the newly enacted multiple use concept, wildlife habitat management and improvement are becoming a major concern for the proper management of the public lands and the maximum production of these lands. For this reason, greater attention must be devoted toward the development of techniques and methods of restoring big game ranges destroyed by fire or depleted by overuse.

To date, one of the most promising methods of restoring big game ranges on public lands involves the artificial seeding of important browse species. There are two methods of accomplishing this. The first method involves the chaining of heavy, mature stands of Pinyon-juniper, followed by aerial seeding of a mixture of grasses and browse species. The second method involves the use of machines for planting browse species, particularly bitterbrush, in drill rows. These machines are designed to be used in areas having relatively flat topography, soils free from rock and in grassland areas lacking heavy brush or trees. They are commonly used in areas where vegetation has been depleted or destroyed by fire.

An example of the potential use of a machine to plant browse seed is the successful completion of the largest known bitterbrush seeding. Undertaken as a part of the 1964-65 Elko Fire Rehabilitation Program, it consisted of nearly 3,000 acres. Topography of the project site varied from broad, flat ridge tops to steep hillsides. (Fig. 1) Soils within the project site ranged from moderately deep to shallow, with protruding rocks often reaching boulder size. (Fig. 2) In certain areas, the ground surface was covered with loose flat volcanic rocks occuring as streamers down hillsides.

Figure 1 - Project site location, North of Elko, Nevada Elko District Office.

Figure 2 - Typical boulder sized rocks in project area.

To complete this project, browse seeder units manufactured by Walter Hansen of Ephraim, Utah were used. These seeder units, known as Hansen seeders, are probably the most widely used machines of their kind. They are designed and constructed for single attachment behind a wheel-type tractor, or at most, a small crawler tractor. (Fig. 3) A conventional three-point hitch is commonly used for attachment of the units to the tractors.

The large size of the project and the nature of the project site necessitated the use of a larger and faster tractor to pull the seeder units. For that reason, a D-6 Caterpillar was used. To further increase the efficiency of the seeding operations, a 20-foot tool bar was used to accommodate dual attachment of the seeder units behind the tractor. The tool bar was attached to the tractor by means of a three-point hitch. (Fig. 4)

Through trial and error, it was found that the Hansen seeder units were not constructed to withstand the strain when being pulled by the power of the larger tractor. They were also unable to withstand the strain when pulled over steep terrain or through rocky soils. Considerable breakage occurred as a result of this strain. Therefore, certain modifications to the seeder units were needed to improve their efficiency and reduce breakage. Following are those modifications:

1. Reinforcement of the shank-to-depth wheel axles with heavier material. Considerable strain is placed on the shank when the wheel strikes large rocks. (Fig. 5)

2. Reinforcement of the back of the drawbar at points where the seeder boxes are attached by the clamps. (Fig. 6)

3. The shanks-to-the-scalpers should be maintained as a "weak point." They absorb most of the strain and bend when the scalpers strike rock. Reinforcement of the shank will result in breakage to other parts of the seeder units. Several shanks should be made from stock material and used for replacements, when necessary. Bent shanks can be easily straightened and reused. (Fig. 7)

Additional modifications are also needed to further increase the efficiency of the seeder units. Following are those modifications:

1. Revision of the clamp on the axle that adjusts the depth wheel. Continuous tightening of the clamp crushes the pipe that holds the depth wheel. (Fig. 6)

Figure 3 - Attachment of Hansen seeder unit behind conventional type tractor.

Figure 4 - Dual attachment of Hansen seeder unit behind crawler tractor by means of tool bar and 3-point hitch.

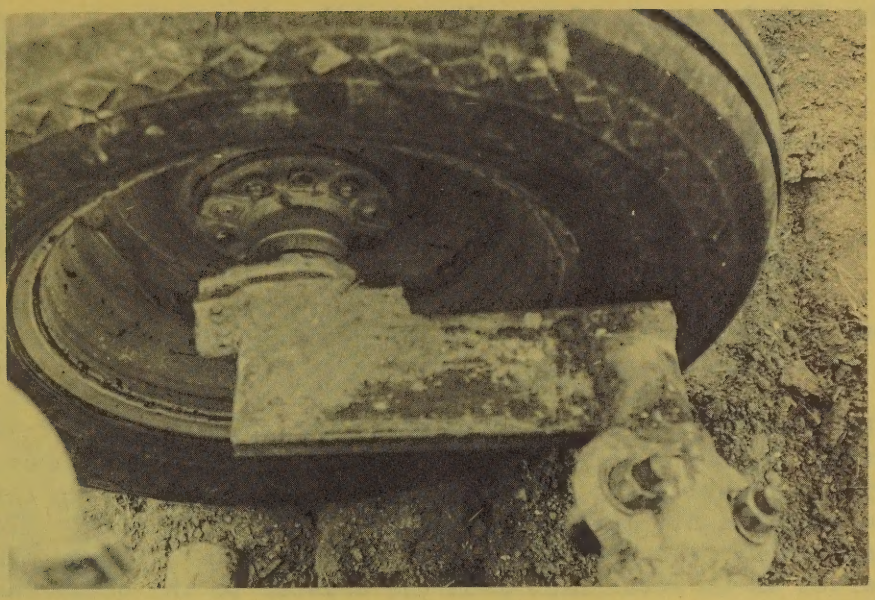


Figure 5 - Reinforced shank-to-depth wheel axle.

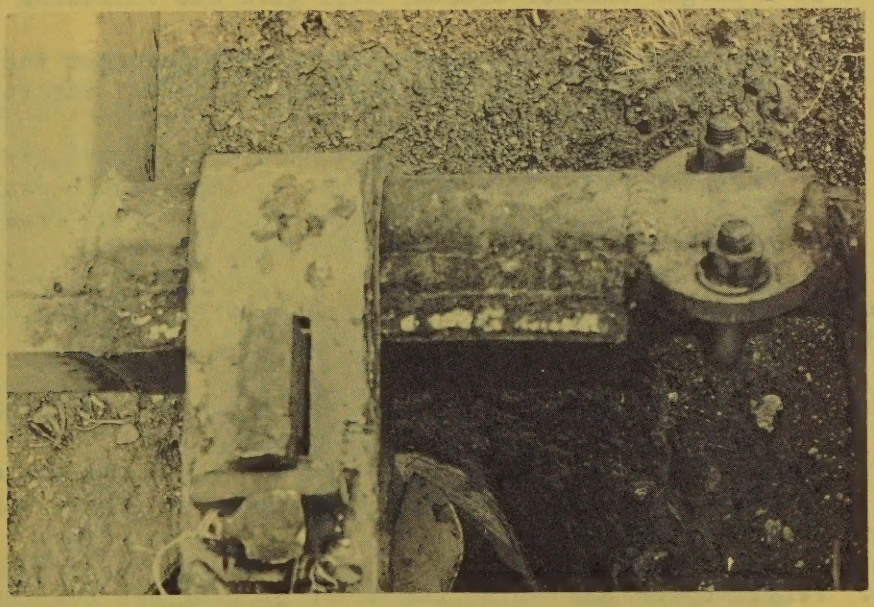


Figure 6 - Reinforced drawbar at point of attachment of seeder boxes. Also shown is the clamp on axle that adjusts depth wheel.

2. Reinforcement of the clamp holding the seeder boxes to the seeder drawbar. Strain on the scalpers cause the clamps to stretch. (Fig. 8)

3. Complete encasing of the seeder box chains to protect them from rocks, dust and dirt.

4. A device for tightening the seeder box chains when they become worn.

Because of the successful use of the 20-foot tool bar, the following notes on its design and construction are included.

The tool bar consisted of two ten-foot sections of 1/2 inch steel, approximately 6 inches in size, jointed at the center with a sleeve joint. A large bolt was placed through the joint to keep the two sections together. This arrangement allows individual flexibility to the seeder units. A three point hitch serves as an attachment from the drawbar to the seeder units. A 15-inch auto wheel with a strip of sheet metal welded over the rim is attached to the exterior end of each ten-foot section. This serves as a guage wheel for the tool bar, as well as giving each section balance. (Illustration 1 & 2)

Use of a larger crawler tractor will give the following advantages:

1. The speed of the larger tractor will increase the amount of acres that can be completed in a normal working day.

2. Permit the seeding of browse species in areas having steep terrain and rocky soils. This is important because browse species, particularly bitterbrush, are often found growing naturally in areas of this nature.

The modificaitons to the Hansen seeder units will give the following advantages:

1. Increase the overall operating efficiency of the seeder units.

2. Reduce breakage, even when the seeder units are pulled by recommended power. Valuable time spent as repair work will be reduced.

3. Permit their use behind the power of a larger tractor, such as that of a D-6 Caterpillar.

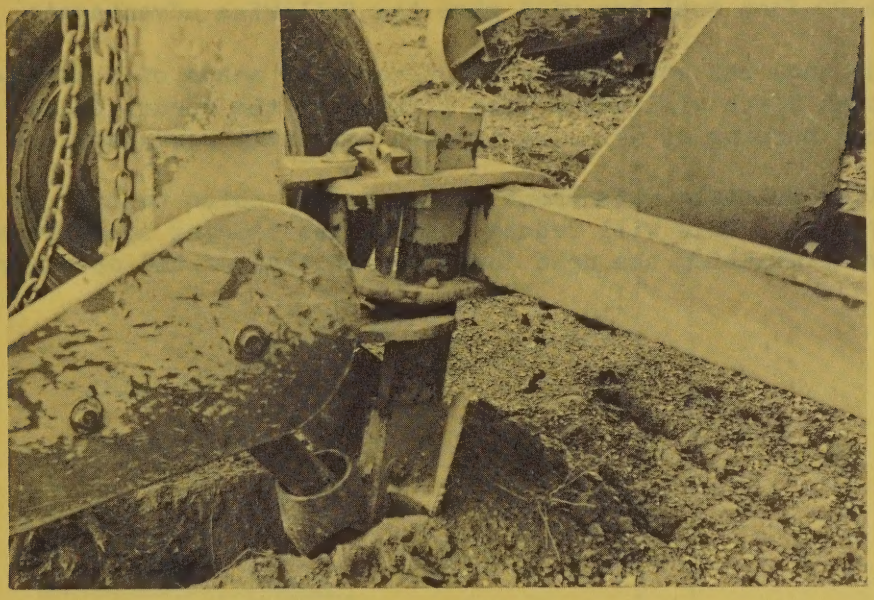


Figure 7 - Shank-to-scalper. Note bent shank.

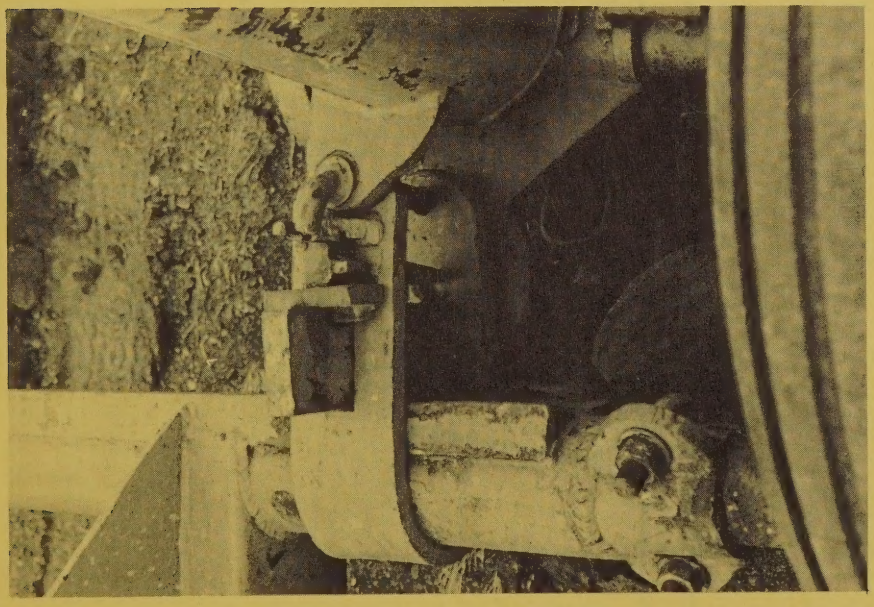


Figure 8 - Clamp that holds seeder box to seeder drawbar.

Use of the 20-foot tool bar will give the following advantages:

1. The tool bar attached to the tractor by means of a three-point hitch will allow free lifting of the seeder units when turning or drilling through extremely rocky soils.

2. Allow multiple attachment of the seeder units behind one tractor. This will reduce cost of the seeding operations by eliminating the need for a second tractor and operator.

TOP VIEW

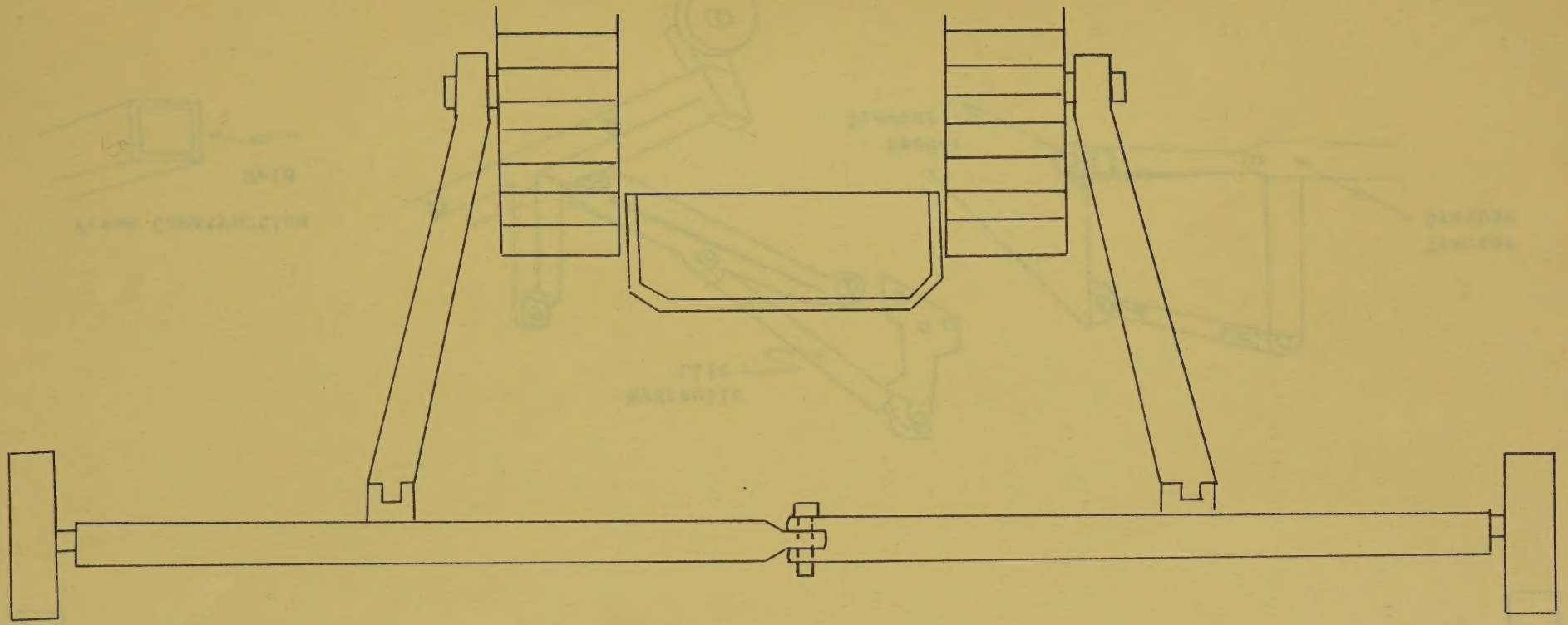
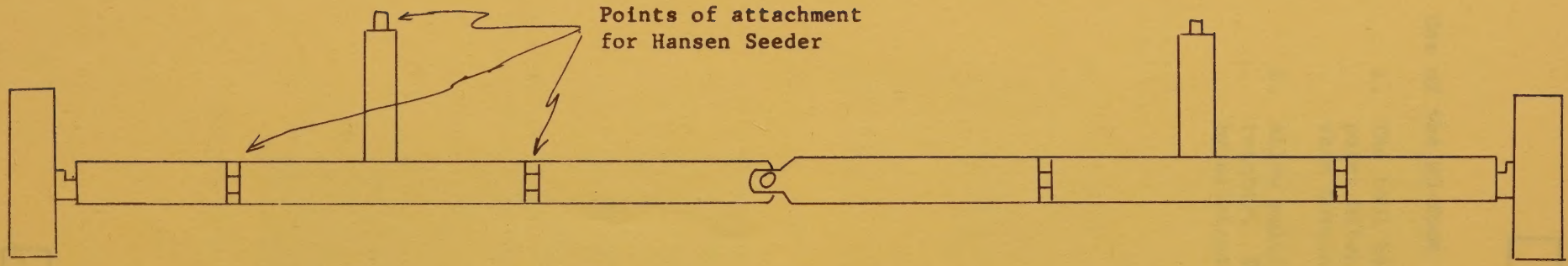


Illustration I

REAR VIEW



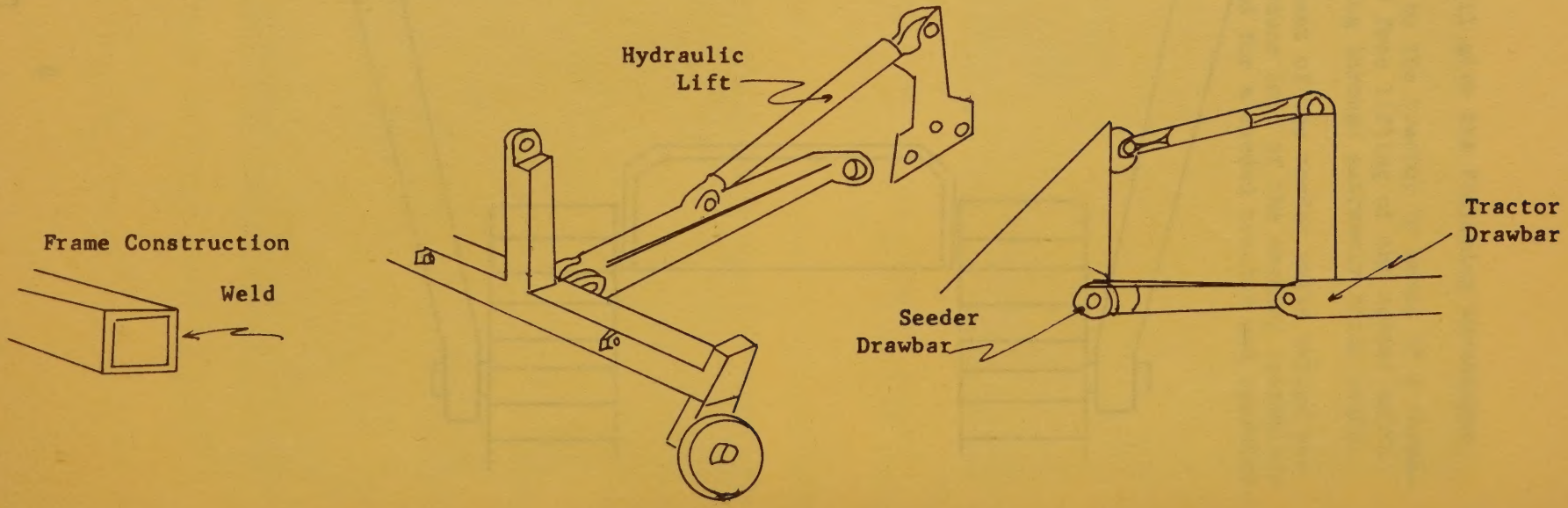


Illustration II

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